WHAT IS CLAIMED IS:

- 1 1. A method of forwarding a network packet comprises:
- 2 reading a table containing a plurality of flags to
- 3 determine which of the plurality of flags is set or cleared;
- 4 and
- 5 performing an operation on the packet to decapsulate or
- 6 encapsulate the packet in accordance with values of the flags.
- 1 2. The method of claim 1 wherein the tables are populated
- with forwarding information.
- 1 3. The method of claim 1 wherein the forwarding table
- 2 structures include a control and management structure
- 3 including a network stack interface and table managers.
- 1 4. The method of claim 1 wherein the table managers manage
- 2 routing tables and can include a plurality of tables including
- a layer 4 connection table, a layer 3 destination table, a
- 4 layer 2 bridge table and a layer 2 connection table.
- 1 5. The method of claim 1 wherein the tables include a flag
- 2 to indicates whether the bytes should be stripped from the

- 3 packet and a field that indicates the number of bytes to be
- 4 stripped.
- 1 6. The method of claim 1 wherein the tables include a field
- that specifies decapsulation of header layers up to the
- 3 specified layer.
- 1 7. The method of claim 1 wherein the tables includes a field
- that specifies an identifier of the current packet
- 3 encapsulation type.
- 1 8. The method of claim 1 wherein the tables include a flag
- that indicates whether bytes should be prepended to the
- 3 packet, a field that specifies the number of bytes and the
- 4 bytes to be encapsulated.
- 1 9. The method of claim 1 wherein the tables include a Next
- 2 Table Type field which indicates that a further lookup is
- 3 required and identifies the table type.
- 1 10. A method for encapsulating/decapsulating packets
- 2 comprises:
- 3 receiving a packet;

- 4 reading in a first header of the packet and perform a
- 5 layer 2 look-up reading a connection table which return
- 6 parameters;
- 7 determine if the table returned a decap or encap flag.
- 1 11. The method of claim 10 wherein if the decap and encap
- 2 flags are set,
- 3 adding the decap byte count to a packet start offset and
- 4 subtracting the encap byte count from the packet start offset;
- 5 and
- 6 prepending the encap bytes to the packet.
- 1 12. The method of claim 10 further comprising:
- 2 determining if there is a next table to examine by
- 3 looking at the blank field in the currently read table.
- 1 13. The method of claim 12 wherein if there is a next table,
- 2 parsing the next header and fetch and read the next
- 3 table.
- 1 14. The method of claim 11 wherein if the decap and encap
- 2 flags were not set,
- determine if the encap flag or the decap flag were set.
- 1 15. The method of claim 11 wherein if the encap flag was set,

- 2 subtract the encap flag byte count from the start offset
- 3 and prepend the encap bytes to the packet.
- 1 16. The method of claim 11 wherein if the decap flag was set
- 2 add a decap byte count to the buffer offset and check the next
- 3 table.
- 1 17. The method of claim 11 wherein the packet is comprised of
- 2 one or more headers followed by a payload, the method further
- 3 comprises:
- 4 copying the payload portion of the packet to a packet
- 5 buffer.
- 1 18. The method of claim 17 wherein copying may place the
- 2 packet at an offset in the buffer to make room for any new
- 3 header that could be prepended to the packet for packet
- 4 forwarding.
- 1 19. A computer program product residing on a computer
- 2 readable media for forwarding a network packet comprises
- 3 instructions to cause a computer to:
- 4 read a table containing a plurality of flags to
- 5 determine, which of the plurality of flags is set or cleared;
- 6 and

- 7 perform an operation on the packet to decapsulate or
- 8 encapsulate the packet in accordance with values of the flags.
- 1 20. The computer program product of claim 19 wherein the
- 2 tables are populated with forwarding information.
- 1 21. The computer program product of claim 19 wherein the
- 2 forwarding table structures include a control and management
- 3 structure including a network stack interface and table
- 4 managers.
- 1 22. A computer program product residing on a computer
- 2 readable media for forwarding a network packet comprises
- 3 instructions to cause a computer to:
- receive a packet;
- 5 read in a first header of the packet and perform a layer
- 6 2 look-up reading a connection table which return parameters;
- 7 determine if the table returned a decap or encap flag.
- 1 23. The computer program product of claim 22 wherein if the
- 2 decap and encap flags are set, the computer program executes
- 3 instructions to:
- 4 add the decap byte count to a packet start offset and
- 5 subtracting the encap byte count from the packet start offset;
- 6 and

- 7 prepend the encap bytes to the packet.
- 1 24. The computer program product of claim 22 further
- 2 comprising instructions to:
- 3 determine if there is a next table to examine by looking
- 4 at the blank field in the currently read table.
- 1 25. The computer program product of claim 24 wherein if there
- 2 is a next table, the computer program executes instructions
- 3 to:
- 4 parse the next header and fetch and read the next table.
- 1 26. The computer program product of claim 22 wherein the
- 2 packet is comprised of one or more headers followed by a
- 3 payload, the computer program product further executes
- 4 instructions to:
- 5 copy the payload portion of the packet to a packet
- 6 buffer.
- 1 27. The computer program product of claim 26 wherein
- 2 instuctions to copy place the packet at an offset in the
- 3 buffer to make room for any new header that could be prepended
- 4 to the packet for packet forwarding.
- 1 28. A processor for processing a network packet comprises:

- a computer storage media storing instructions to cause a
- 3 computer to:
- 4 read a table containing a plurality of flags to
- 5 determine, which of the plurality of flags is set or cleared;
- 6 and
- 7 perform an operation on the packet to decapsulate or
- 8 encapsulate the packet in accordance with values of the flags.
- 1 29. The processor of claim 28 wherein the table contains
- 2 forwarding information.
- 1 30. A method of decapsulating a network packet
- comprises:
- reading a table containing a plurality of flags to
- 4 determine which of the plurality of flags is set or cleared;
- 5 and
- 6 performing a decapsulate operation on the packet in
- 7 accordance with values of the flags.
- 1 31. The method of claim 30 wherein the table contains
- 2 forwarding information.